



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PUBLICATIONS

OF THE

Astronomical Society of the Pacific.

VOL. XXVI SAN FRANCISCO, CALIFORNIA, FEBRUARY, 1914 No. 152

LIST OF MEMBERS

OF THE

ASTRONOMICAL SOCIETY OF THE PACIFIC.

FEBRUARY 1, 1914.

OFFICERS OF THE SOCIETY

R. T. CRAWFORD *President*
R. G. AITKEN *First Vice-President*
S. D. TOWNLEY *Second Vice-President*
C. S. CUSHING *Third Vice-President*
D. S. RICHARDSON *Secretary-Treasurer*
R. G. AITKEN *Secretary on Mount Hamilton*

Board of Directors—Messrs. A. B. BAIRD, R. G. AITKEN, W. H. CROCKER, CHARLES BURCKHALTER, C. S. CUSHING, R. T. CRAWFORD, J. COSTA, S. D. TOWNLEY, F. V. CORNISH, A. H. MARKWART, D. S. RICHARDSON.

Finance Committee—Messrs. C. S. CUSHING, W. H. CROCKER, and A. H. MARKWART.

Publication Committee—Messrs. R. G. AITKEN and H. D. CURTIS.

Library Committee—Messrs. D. S. RICHARDSON, F. V. CORNISH, and A. H. MARKWART.

Comet-Medal Committee—Messrs. W. W. CAMPBELL, R. H. TUCKER, and H. D. CURTIS.

BRUCE MEDALISTS.

SIMON NEWCOMB†

PROF. ARTHUR AUWERS { Linden Str. 91, S. W. Berlin,
Germany.

SIR DAVID GILL†

GIOVANI V. SCHIAPARELLI†

SIR WILLIAM HUGGINS†

HERMANN CARL VOGEL†

PROF. EDWARD C. PICKERING..... { Harvard College Observatory,
Cambridge, Mass.

DR. GEORGE W. HILL West Nyack, N. Y.

M. JULES-HENRI POINCARÉ†

Prof. J. C. KAPTEYN..... { Astronomical Laboratory,
Groningen, Holland.

DR. O. BACKLUND..... { Royal Observatory, Pulkowa,
Russia.

PATRONS OF THE SOCIETY.

DR. EDWARD SINGLETON HOLDEN West Point, N. Y.

JOSEPH A. DONOHUE.†

ALEXANDER MONTGOMERY. †

CATHERINE WOLFE BRUCE.†

JOHN DOLBEER.†

WILLIAM ALVORD.†

WILLIAM MONTGOMERY PIERSON.†

† Deceased.

LIFE MEMBERS.

ALDIS, Prof. W. STEDMAN, F.R.A.S....	{ 5 Beacon Oak Road, Tenterden, Kent, England.
AUBERTIN, Mr. J. J., F.R.A.S.....	{ 33 Duke St., St. James, S. W., London, Eng.
BOULTON, JR., Mr. HENRY LORD	{ Carácas, Venezuela, or Box F.R.A.S. 2015, New York, N. Y.
CALLANDREAU, Dr. J.	{ Oradour sur Vayres, Haute Vienne, France.
CARNEGIE, Mr. ANDREW	{ 5 West 51st St., New York, N. Y.
CEBRIAN, Mr. J. C.....	{ 1801 Octavia St., San Francisco, Cal.
CLARK, Mr. MATEO	{ 1 Victoria St., Westminster, S. W., London, England.
COLTON, Mr. A. L.....	P. O. Box 137, Washington, D. C.
CROCKER, Mr. WILLIAM H.	{ Crocker National Bank, San Francisco, Cal.
CUSHING, Mr. CHAS. S.	{ 821 First National Bank, San Francisco, Cal.
DAVIDSON, Mr. J. EWEN	{ 98 Banbury Road, Oxford, Eng- land.
DRAPER, Mrs. ANNA PALMER	{ 271 Madison Ave., New York, N. Y.
FORBES, Mr. ANDREW B.....	{ Formerly 401 California St., San Francisco, Cal.
FOSTER, Mr. ARTHUR W.	Flood Bldg., San Francisco, Cal.
FRICK, Mr. H. C.....	42 Fifth Ave., Pittsburg, Pa.
FRY, Mr. ROBERT D.	{ 628 Montgomery St., San Fran- cisco, Cal.
GRANT, Mr. JOSEPH D.	Burlingame, Cal.
GREIG, Mr. ANDREW	{ 10 Cluny Gardens, Edinburgh, Scotland.
HALE, Prof. GEORGE E.	{ Director of Solar Observatory, Foreign Assoc. R.A.S. Solar Observatory Office, Pas- adena, Cal.
HILL, Mr. HORACE L.	{ Care of Laidlaw & Co., New York City.
HOFFMAN, Mr. SAMUEL V., F.R.A.S...	{ 91 Madison Ave., Morristown, N. J.
HOLDEN, Prof. E. S., SC.D., LL.D., LITT.D..	{ U. S. Military Academy, West Point, N. Y.
HOWAT, Mr. WM.	{ 458 William St., Melbourne, Victoria.
KEENEY, Mr. CHARLES C.	2220 Clay St., San Francisco, Cal.
KENNELLY, Prof. A. E., F.R.A.S.....	{ Division of Engineering, Har- vard University, Cambridge, Mass.
KÖHL, Mr. TORVALD	Odder, Denmark.
DE LANDERO, Mr. C. F.	{ P. O. Box 1, Pachuca, State Hidalgo, Mexico.

LEWIS, Mr. CLARENCE MACKENZIE...	{ Care Wm. Salomon & Co., 25 Broad St., New York, N. Y.
LOOMIS, Mr. HENRY B.	Seattle, Wash.
MAW, Mr. W. H., F.R.A.S.	{ 18 Addison Road, Kensington, London, England.
MOLERA, Mr. E. J., C.E.	{ 2025 Sacramento St., San Fran- cisco, Cal.
MURPHY, Hon. B. D.	{ Formerly 530 California St., San Francisco, Cal.
MADDRILL, Dr. JAMES D., F.R.A.S.	{ Linden Apartments, Hartford, Conn.
NEWHALL, Mr. H. F., F.R.A.S.	{ Observatory of the University, Cambridge, England.
PATTEN, Mr. JOHN	325 E. 97th St., New York, N. Y.
PERKINS, Hon. GEO. C.	Oakland, Cal.
PERRINE, Prof. C. D.	{ Director Cordoba Observatory, Foreign Assoc. R.A.S. { Cordoba, Argentine Republic.
PHIPPS, JR., Mr. HENRY	{ Carnegie, Phipps & Co., Pitts- burgh, Pa.
PIKE, Mr. RUTHVEN W.	{ Room 914 So. LaSalle St., No. 19 care Arthur B. Wells, Chica- go., Ill.
PORTER, Miss JULIET	37 Deane St., Worcester, Mass.
RODGERS, Mrs. ARTHUR	{ Formerly Leavenworth and Val- lejo Sts., San Francisco, Cal.
DE SABLA, JR., Mr. E. J.	San Mateo, Cal.
SCHAEBERLE, Prof. J. M.	{ 502 Second St., Ann Arbor, Mich.
SCHIFF, Mr. JACOB H.	932 Fifth Ave., New York, N. Y.
SEE, Dr. T. J. J., F.R.A.S.	{ Naval Observatory, Mare Island, Cal.
SMITH, Mr. CHARLES S.	{ 25 W. 47th St., New York, N. Y.
SMITH, Mr. E. C.	Saint Albans, Vermont.
SPRECKELS, Mr. A. B.	58 Clay St., San Francisco, Cal.
SPRECKELS, Mr. C. A.	138 Front St., New York, N. Y.
SPRECKELS, Mrs. C. A.	San Mateo, Cal.
STANFORD, Mr. THOS. W.	{ 142 Russell St., Melbourne, Vic- toria.
STONE, Mr. JULIUS	{ Care of the Ohio Central Fuel Co., Columbus, Ohio.
STRÓYBERG, Mr. V.	{ Actuary, Fredericksborggrade 54*, Copenhagen-k, Denmark.
TURNER, Mr. HENRY J.	{ Woodville, Rappahannock, Co., Virginia.
TYSON, Mr. R. J.	{ Seaboard Bank, 24 Market St., San Francisco, Cal.
WHITE, Dr. ANDREW D.	Ithaca, N. Y.
WILLMARTH, Mrs. MARY H.	222 Michigan Ave., Chicago, Ill.
WITKOVSKY, Gen. B.	{ Lesnoi, Gr. Obiesdnaja 16, St. Petersburg, Russia.

ACTIVE MEMBERS.

AITKEN, Prof. R. G.	{ Lick Observatory, Mount Ham-
Foreign Assoc. R.A.S.	{ iltan, Cal.
ALLEN, LEAH B.	{ Observatory House, Wellesley,
	{ Mass.
ALLYNE, Miss EDITH W.	{ 2609 Gough St., San Francisco,
	{ Cal.
ALTSCHUL, Mr. CHARLES	32 W. 86th St., New York, N. Y.
ASH, Mr. DORSEY	{ 2555 Buena Vista Way, Berke-
	{ ley, Cal.
BABCOCK, Mr. ALLEN H.	146 Lake St., Oakland, Cal.
BACON, Mr. E. H.	{ 1103 Merchants Exch. Bldg.,
	{ San Francisco, Cal.
BAIRD, Mr. B. A.	{ 135 14th Ave., San Francisco,
	{ Cal.
BAZET, Dr. L.	{ 844 Phelan Building, San Fran-
	{ cisco, Cal.
BROWN, Miss FLORENCE	P. O. Box 566, Azusa, Cal.
BENEDICT, Mr. PAUL M.	P. O. Box 637, New Haven, Con
BENKMAN, Mr. EDWIN G.	{ 1596 Fulton St., San Francisco,
	{ Cal.
BLANCHARD, Miss ELIZABETH	{ 2315 Sacramento St., San Fran-
	{ cisco, Cal.
BLANEY, Mrs. CHARLES D.	Saratoga, Cal.
BOGY, L. V.	Chinook, Mont.
BOOTHROYD, Prof. S. L.	{ Dept. of Mathematics, Univer-
	{ sity of Washington, Seattle,
	{ Wash.
BRACKETT, Prof. F. P.	{ Pomona College, Claremont,
	{ Cal.
BRASCH, Mr. F. E.	Stanford University, Cal.
BRASHEAR, Mr. J. A., F.R.A.S.	Allegheny City, Pa.
BRENNAN, Rev. M. S.	{ 6304 Minnesota Ave., St. Louis,
	{ Mo.
BREWER, Mr. EDWARD M.	27 Kilby St., Boston, Mass.
BURCKHALTER, Mr. CHARLES, F.R.A.S.	{ Chabot Observatory, Oakland,
	{ Cal.
CAMPBELL, Prof. W. W.	{ Director of Lick Observatory,
Foreign Assoc. R.A.S.	{ Mount Hamilton, Cal.
CASSADY, Mr. WINFIELD	Hamler, Ohio.
CHESEBROUGH, Mr. H. C.	{ 401 Alaska Com'l Bldg., San
	{ Francisco, Cal.
CHIEF ASTRONOMER	{ Department of Interior, Ottawa,
	{ Canada.
COMFORT, Major S.	{ Care Bedford Petroleum Cie., 67
	{ Boulevard Haussmann, Paris,
	{ France.

CONARD, Mr. CLAUDE G.	{ 2201 Telegraph Ave., care California Bible House, Oakland, Cal.
CONROY, Mr. CHARLES C.	{ P. O. Box 826, Los Angeles, Cal.
CORNISH, Mr. FRANK V.	{ Underwood Bldg., San Francisco, Cal.
COSTA, Mr. J.	{ 104 Montgomery St., San Francisco, Cal.
CRAWFORD, Prof. RUSSELL TRACY ...	{ Students' Observatory, Berkeley Cal.
CUNNINGHAM, Miss S. J.	{ 3308 Arch St., Philadelphia, Pa.
CURTIS, Prof. HEBER D.	{ Lick Observatory, Mount Hamilton, Cal.
DOHERTY, R. L.	Palmyra, Mo.
DONOHUE, Mr. J. A.	{ V. P. Donohoe-Kelly Banking Co., San Francisco, Cal.
DYER, Mr. ERNEST I.	{ 231 Mills Bldg., Care Union Oil Co., San Francisco, Cal.
EDWARDS, Prof. GEORGE C.	2546 Dana St., Berkeley, Cal.
EINARSSON, Dr. S. STURLA	{ Students' Observatory, Berkeley, Cal.
ELLERMAN, Mr. FERDINAND	{ Solar Observatory, Mount Wilson, Cal.
EVERSHED, Mrs. JOHN	{ The Observatory, Kodaikanal, South India.
FORBES, SIR GEORGE STUART, F.R.A.S. ...	{ Wellington Club, Grosvenor Place, London, England.
FITCHETT, H. W.	{ "Kesteven" Private Observatory, Balwyn, Victoria, Australia.
GALLOWAY, Mr. J. D.	1500 Euclid Ave., Berkeley, Cal.
GELDERN, Mr. OTTO VON	{ 865 Pacific Building, San Francisco, Cal.
GLANCY, Miss ESTELLE	{ National Observatory, Cordoba, Argentina.
GOULD, Mr. ELWYN B.	808 Juniper St., San Diego, Cal.
GRAY, Dr. EDWARD	Eldridge, Cal.
GREAVES, Mr. THOMAS T.	{ 746 Phelan Bldg., San Francisco, Cal.
HART, Judge CHARLES F.	Kapiolani Park, Honolulu, T. H.
HEARST, Mrs. PHEBE A.	{ Hearst Bldg., San Francisco, Cal.
HEREDIA, Rev. G., S. J., F.R.A.S.	{ Colegio del Velódromo, Puebla, Mexico.
HALL, Dr. G. W.	West Nyack, N. Y.
HODGHEAD, Mr. BEVERLY L.	{ Holbrook Bldg., San Francisco, Cal.

HOWE, Prof. CHAS. S., F.R.A.S.	Case Observatory, Cleveland, O.
HUSSEY, Prof. W. J.	{ Director Detroit Observatory,
Foreign Assoc. R.A.S.	{ Ann Arbor, Mich.
JAYNES, Mr. FRANK	{ 160 West Clay Park, San Fran-
	{ cisco, Cal.
JONCKHERE, Mr. ROBERT.	{ Observatoire de Lille, Hem,
	{ France.
KAPTEYN, Prof. J. C.	{ Astronomical Laboratory, Gron-
	{ ingen, Holland.
LARKIN, Prof. EDGAR L.	{ Director Mount Lowe Observa-
	{ tory, Echo Mountain, Cal.
LEUSCHNER, Prof. A. O., F.R.A.S.	{ Director Students' Observatory,
	{ Berkeley, Cal.
LIETZ, Mr. ADOLPH	{ 632 Commercial St., San Fran-
	{ cisco, Cal.
LUDEWIG, Mr. W. R.	{ Care J. A. Brashear, 1954 Per-
	{ ryville Ave., Pittsburgh, Pa.
LUKENS, Mr. EDWARD G.	1362 Jackson St., Oakland, Cal.
LYNCH, JAMES K.	{ First National Bank, San Fran-
	{ cisco, Cal.
MANSON, Mr. MARSDEN, C.E., PH.D.	{ Room 801, 4 Montgomery St.,
	{ San Francisco, Cal.
MARKWART, Mr. A. H.	377 Palm Ave., Oakland, Cal.
MARTENS, Mr. FERDINAND	1809 Euclid Ave., Berkeley, Cal.
MEYER, Mr. W. F.	{ International Latitude Observa-
	{ tory, Ukiah, Cal.
MOFFITT, Mr. JAMES K.	{ First National Bank, San Fran-
	{ cisco, Cal.
MONCK, Mr. W. H. S., F.R.A.S.	17 Clyde Road, Dublin, Ireland.
MOORE, Dr. J. H.	{ Lick Observatory, Mt. Hamil-
	{ ton, Cal.
MORSE, Mr. FREMONT, U.S.C.&G. SUR.	{ P. O. Box 2512, San Francisco,
	{ Cal.
MURDOCK, Mr. C. A.	{ 2812 Sacramento St., San Fran-
	{ cisco, Cal.
MCADIE, Prof. A. G.	{ Blue Hill Observatory, Read-
	{ ville, Mass.
MCENERNEY, Mr. GARRET W.	{ 1277 Flood Bldg., San Francis-
	{ co, Cal.
MCNEILL, Prof. MALCOLM	Lake Forest, Ill.
NEWKIRK, Dr. B. L.	{ University of Minnesota, Min-
	{ neapolis, Minn.
NOORDHOFF, Mr. P.	Groeningen, Holland.
O'HALLORAN, Miss ROSE	{ 50 Buena Vista Terrace, San
	{ Francisco, Cal.
PADDOCK, Mr. GEORGE FREDERICK	{ 63 Governor St., Providence,
	{ R. I.

Astronomical Society of the Pacific. 9

PARDEE, Hon. GEORGE C.	Oakland, Cal.
PARRAMORE, Dr. E. L.	{ Boye's Hot Springs, Box 110, Sonoma County, Cal.
PHELAN, Hon. JAMES D.	{ 606 Phelan Bldg., San Francisco, Cal.
PIERSON, Mr. LAWRENCE H.	{ Pacific Pine Co., San Francisco, Cal.
POST, Mr. CHARLES A., F.R.A.S.	Bayport, Long Island, N. Y.
PROCTOR, Miss MARY	{ Care S. M. Southwell, Paling's Music Store, George St., Syd- ney, N. S. W.
RICARD, Rev. J. L., S.J.	Santa Clara, Cal.
RICHARDSON, Mr. DANIEL S.	{ 2541 Hilgard Ave., Berkeley, Cal.
PICKERING, Prof. E. C.	{ Harvard College Observatory, Cambridge, Mass.
ROBERTS, Mrs. ISAAC, D. SC.	{ Chateau Rosa Bonheur. By Thomery, Seine et Marne, France.
ROGERS, Mr. E. D.	Boulder Creek, Cal.
SEARES, Prof. FREDERICK H.	{ Solar Observatory, Pasadena, Cal.
SEARLE, Rev. GEORGE M., C.S.P.	Newman Hall, Berkeley, Cal.
SANDERS, Mr. MORGAN	{ 1419 West Lanvale St., Balti- more, Md.
SNYDER, Prof. M. B., F.R.A.S.	{ Director of Philadelphia Ob- servatory, Philadelphia, Pa.
SPENCER, Mr. GEORGE OTIS	{ Care Middle West Utilities Co., Merchants Loan & Tr., Bldg., 112 W. Adams St., Chicago, Ill.
SPRECKELS, Mr. RUDOLPH	{ 1400 Pacific Ave., San Francisco, Cal.
STANFORD, Miss GERTRUDE	{ Warm Springs, Alameda Coun- ty, Cal.
TALBOT, Mr. C. F. A.	Redwood City, Cal.
TOULBOT, ANTHONY S.	Mission City, B. C.
TOWNLEY, Prof. S. D.	{ P. O. Box 815, Stanford Uni- versity, Cal.
TUCHLER, Dr. A. S.	{ 703 Van Ness Ave., San Fran- cisco, Cal.
TUCKER, Prof. R. H.	{ Lick Observatory, Mount Ham- ilton, Cal.
TURNER, Dr. ARTHUR B.	Montclair, N. J.
VAN INGEN, Mr. EDWARD H.	9 East 71st St., New York, N. Y.
VILLIGER, Dr. W.	{ Care of Carl Zeiss; z. Hd. Dr. M. von Rohr, Jena, Germany.
WARNER & SWASEY Co., THE	East Prospt St., Cleveland, O.

Publications of the

WHITE, Mrs. ELSIE HEDLEY	{ 209 West Park Ave., Valley City, North Dakota.
WILLIAMS, Mr. H. C.	{ 1476 Washington St., San Fran- cisco, Cal.
ZIEL, Mr. F. R.	{ 607 Merchants Exchange Bldg., San Francisco, Cal.

INSTITUTIONAL MEMBERS.

CALIFORNIA STATE LIBRARY	Sacramento, Cal.
DANIEL SCHOLL OBSERVATORY	{ Franklin and Marshall College, Lancaster, Pa.
FIELD MEMORIAL OBSERVATORY	{ Williams College, Williamstown, Mass.
FREE PUBLIC LIBRARY	Worcester, Mass.
IMPERIAL OBSERVATORY	{ University of St. Petersburg, Russia.
LIBRARY OF THE CHABOT OBSERVATORY	Oakland, Cal.
LIBRARY OF THE LELAND STANFORD JR. UNIVERSITY	Stanford University, Cal.
LIBRARY OF THE LICK OBSERVATORY...	Mount Hamilton, Cal.
LIBRARY OF THE MECHANICS INSTITUTE	{ 99 Grove St., San Francisco, Cal.
LIBRARY OF PRINCETON UNIVERSITY ..	Princeton, N. J.
LIBRARY OF ST. IGNATIUS COLLEGE....	{ 2211 Hayes St., San Francisco, Cal.
LIBRARY OF THE U. S. MILITARY ACADEMY	West Point, N. Y.
LIBRARY OF THE UNIVERSITY OF CALI- FORNIA	Berkeley, Cal.
LIBRARY OF THE UNIVERSITY OF ILLINOIS	University Station, Urbana, Ill.
LIBRARY OF THE UNIVERSITY OF IN- DIANA	Bloomington, Indiana.
LIBRARY OF THE UNIVERSITY OF MICH- IGAN	Ann Arbor, Mich.
LIBRARY OF THE UNIVERSITY OF PENN- SYLVANIA	Philadelphia, Pa.
LIBRARY OF THE UNIVERSITY OF WASHINGTON	Seattle, Wash.
LIBRARY OF THE UNIVERSITY OF SOFIA.	Sofia, Bulgaria, Europe.
LIBRARY OF YALE UNIVERSITY	New Haven, Conn.
LIBRARY OF SWARTHMORE COLLEGE....	Swarthmore, Pa.
LIBRARY OF THE UNIVERSITY OF KAN- SAS	Lawrence, Kas.
LOWELL OBSERVATORY	Flagstaff, Ariz.
NEW YORK PUBLIC LIBRARY	{ 476 5th Ave., New York, N. Y.

Astronomical Society of the Pacific. 11

OAKLAND FREE PUBLIC LIBRARY	Oakland, Cal.
SEATTLE PUBLIC LIBRARY	Seattle, Wash.
SHATTUCK OBSERVATORY	{ Dartmouth College, Hanover, N. H.
SMITH COLLEGE LIBRARY	Northampton, Mass.
SOCIETY OF AMATEUR ASTRONOMERS..	{ 47 Mjasrnitzkaja, Moscow, Russia.
THE ASTRONOMER	{ Union Observatory, Johannes- berg, Transvaal.
THE JOHN CRERAR LIBRARY	Chicago, Ill.
THE PUBLIC LIBRARY	Boston, Mass.
THE PUBLIC LIBRARY	Los Angeles, Cal.
WASHINGTON UNIVERSITY LIBRARY ..	St. Louis, Mo.

CORRESPONDING INSTITUTIONS

Albany, New York, Dudley Observatory.
 Arequipa, Peru, Southern Station, Harvard College Observatory.
 Allegheny, Pennsylvania, Allegheny Observatory.
 Armagh, Ireland, Armagh Observatory.
 Bamberg, Germany, Remeis-Sternwart.
 Bergedorf, Germany, Hamburger Sternwarte.
 Berlin, Germany, Königl. Astronomisches Recheninstitut.
 Berlin, Germany, Königliche Sternwarte.
 Brussels, Belgium, Bibliothèque de la Société Belge d'Astronomie, 27
 Montagne de la Cour.
 Brussels, Belgium, Observatoire Royal de Belgique.
 Bruxelles, Belgium, Société Belge D'Astronomia.
 Cambridge, England, University Observatory.
 Cape Town, Africa, Royal Observatory.
 Christiania, Norway, Universitæts-Sternwarte.
 Cincinnati, Ohio, Cincinnati Observatory, Station O.
 Columbia, Missouri, Laws Observatory, University of Missouri.
 Copenhagen, Denmark, Observatory.
 Cordoba, Argentine Republic, National Observatory.
 Dorpat, Russia, University Observatory.
 Dublin, Ireland, Dunsink Observatory.
 Dublin, Ireland, Royal Dublin Society.
 Edinburgh, Scotland, Royal Observatory.
 Geneva, Switzerland, Observatoire.
 Glasgow, Scotland, University Observatory.
 Gotha, Germany, Herzogliche Sternwarte.
 Goettingen, Germany, Königliche Sternwarte.
 Greenwich, England, Royal Observatory.
 Hamburg, Germany, Hamburger Sternwarte.
 Heidelberg, Germany, Astrometrische Abteilung der Grossherzoglichen
 Sternwarte.

- Heidelberg, Germany, Astrophysikalische Abteilung der Grossherzoglichen Sternwarte.
- Helsingfors, Russia, University Observatory.
- Hiram, Ohio, Observatory of Hiram College.
- Ixelles-Bruxelles, Belgium, Prof. Paul Stroobaut, 13 Ave. de Haut Pont.
- Kasan, Russia, University Astronomical Observatory.
- Kiel, Germany, Universitäts-Sternwarte.
- Kodaikanal, Palani Hills, South India, Observatory.
- Koenigsberg, in Pr. Germany, Königliche Sternwarte.
- La Plata, Argentine Republic, Observatory.
- Leipsic, Germany, Universitäts-Sternwarte.
- Leyden, Holland, Universitäts-Sternwarte.
- Lisbon (Tapada), Portugal, Real Observatorio.
- London, England, British Museum.
- London, England, The Nautical Almanac, 3 Verulam Bldgs., Gray's Inn.
- London, England, Royal Astronomical Society.
- London, England, 3 Verulam Bldgs., Gray's Inn, The Nautical Almanac.
- Lund, Sweden, University Observatory.
- Madison, Wisconsin, Washburn Observatory.
- Madrid, Spain, Observatorio Astronómico.
- Marseilles, France, Observatoire.
- Melbourne, Victoria, Observatory.
- Milan, Italy, Osservatorio Astronomico di Brera.
- Moscow, Russia, University Observatory.
- Mount Wilson, via Pasadena, Cal., Solar Observatory.
- Munich, Germany, Königliche Sternwarte.
- Naples, Italy, Osservatorio Astronomico.
- New Haven, Connecticut, Yale Observatory Observatory.
- New York, New York, Columbia University Observatory.
- Nice, France, Observatoire.
- Northfield, Minnesota, Goodsell Observatory.
- Oxford, England, Radcliffe Observatory.
- Oxford, England, University Observatory.
- Padua, Italy, Osservatorio Astronomico.
- Paris, France, Bureau des Longitudes.
- Paris, France, Observatoire National.
- Paris, France, Rue Cassini 16, Société Astronomique de France.
- Potsdam, Germany, Astrophysikalisches Observatorium.
- Prague, Austro-Hungary, Universitäts-Sternwarte.
- Pulkowa, Russia, Imperial Observatory.
- Rio de Janeiro, Brazil, Observatory.
- Rome, Italy, Osservatorio Astronomico del Collegio Romano.
- Rome, Italy, Specula Vaticana.
- San Francisco, Cal., California Academy of Sciences.
- San Francisco, Cal., Technical Society of the Pacific Coast.
- Stockholm, Sweden, University Observatory.

Strassburg, Germany, Universitäts-Sternwarte.
Sydney, New South Wales, Observatory.
Tacubaya, Mexico, Observatorio Astronomico Nacional.
Tokio, Japan, University Observatory.
Toulouse, France, Observatoire.
University Park, Colorado, Chamberlin Observatory.
University of Virginia, Virginia, McCormick Observatory.
University of Pennsylvania, Upper Darby, Pa., Flower Observatory.
Upsala, Sweden, University Observatory.
Vienna, Austria, K. K. Sternwarte.
Vienna (Ottakring), Austria, Von Kuffnersche Sternwarte.
Washington, D. C., Library of Congress, Periodical Division.
Washington, D. C., National Academy of Sciences.
Washington, D. C., Naval Observatory.
Washington, D. C., Smithsonian Institution.
Washington, D. C., Nautical Almanac, U. S. Naval Office.
Washington, D. C., U. S. Coast and Geodetic Survey.
Williams Bay, Wisconsin, Yerkes Observatory.
Zurich, Switzerland, Observatory.

EXCHANGES.

Astronomische Nachrichten, Kiel, Germany.
Prof. ELIS STROMGREN, Observatory of Copenhagen, Denmark.
Prof. A. A. NJLAND, The Observatory, Utrecht, Holland.
Revista de la Sociedad Astronomica de Espana y America, Barcelona, Spain.
Mr. F. ARCHENHOLD, Director of Treptow Sternwarte, Berlin, Germany.
Observatorio Astronomico de Cartuja, Granada, Spain.
Prof. L. PRAJKA, Nizbor Observatory, Bohemia.
Prof. Dr. H. J. KLEIN, Editor of *Sirius*, Theresien St., 85 Köln-Lindenthal, Germany.
Gazette Astronomique, Société d'Astronomie d'Auvers, Rue Pycke 55, Antwerp, Belgium.
Astrophysical Journal, Williams Bay, Wisconsin.
Popular Astronomy, Northfield, Minn.
The Observatory, Greenwich, England.
Revista di Astronomia, Società Astronomica Italiana, Turin, Italy.
Orion, Strada Rosca No. 3, Rucarest, Roumania.
Journal Astronomique, Observatoire de Lille, Hem, France.
Astronomia Popolare, Palazzo Madama, Turin, Italy.
Società Astronomica Italiana, Rue Maria Vittoria 23, Turin, Italy.
The Journal of the British Astronomical Association, care F. W. Le-vander, 30 North Villas, Camden Square, N. W., London, England.
Monthly Notices, Royal Astronomical Society, London, England.
American Mathematical Society, 501 West 116th St., New York, N. Y.

- Società degli Spettroscopisti Italiani, Catania, Italy.
Sociedad Científica "Antonio Alzate," Mexico, Mexico.
Solar Observatory, Mount Wilson, via Pasadena, Cal.
American Philosophical Society, 105 South Fifth St., Philadelphia, Pa.
Harvard College Observatory, Cambridge, Mass.
The Monthly Evening Star Map, 150 Nassau St., New York, N. Y.
The Astronomical Herald, Tokyo, Japan.
Publication of Pomona College, Claremont, Cal.
The Astronomical Journal, Albany, N. Y.
Journal de Physique, 5 Rue de la Santé (13^e), Paris, France.
Journal of the Royal Astronomical Society of Canada, 198 College St.,
Toronto, Canada.
Ciel et Terre, 24 Avenue des Villas, Bruxelles, Belgium.
Sociedad Astronomica, Diagonal 462.2, Barcelona, Spain.